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the Wimbledon Sewage Works, England. The principle underlying this plan of dealing with sewage is the employment of "amine" salts in combination with milk of lime. At Wimbledon, herring brine is used, and on mixing with the lime a very soluble gaseous re-agent is evolved, to which the inventor has given the name of "amerinol." This re-agent possesses a peculiar briny odor, and when introduced into sewage is said rapidly to extirpate all micro-organisms capable of causing putrefaction or disease. The effect is almost instantaneous. By the action of the lime, violent flocculation is caused, and subsidence takes place in about half an hour, the putrid smell of the sewage being replaced by the peculiar briny odor. According to Dr. Klein, the destruction of micro-organisms is absolute. The total cost per annum of treating London sewage by this method is put at \$625,000. Should the residue prove to possess any value for agricultural purposes, its sale would tend still further to reduce the expense.

VACCINATION IN JAPAN.—Vaccination, according to *Medical News*, has been obligatory for some years in Japan, and every infant is required by the police to be vaccinated. The value of the procedure is, however, well recognized by the people themselves, and the government hospitals in every town are always thronged with applicants on the weekly "vaccination day." In 1886 there were 1,531 vaccinations to each 10,000 inhabitants.

BOOK-REVIEWS.

Benjamin Franklin. By JOHN T. MORSE, Jun. Boston, Houghton, Mifflin, & Co. 12°. \$1.25.

THIS is the latest issue in the American Statesmen Series, and is well worthy of its place. It treats Franklin exclusively as a statesman, his scientific discoveries being only incidentally alluded to, and his business life very slightly sketched. His early years, too, are passed quickly over, the author thinking that Franklin himself has recounted his early life so admirably that no one else can successfully deal with it. Accordingly, with the third chapter we find our hero despatched on his first mission to England, and all the rest of the book is devoted exclusively to his public services. Mr. Morse shows perfect mastery of his subject, and his style is clear, refined, and dignified; and these qualities make the book interesting throughout. His account of Franklin's labors in England is sufficiently full, and shows why in the main they failed. The dispute between the people of Pennsylvania and the proprietaries of the province was one that could not be settled, and in fact was not settled, until the people had the entire government in their hands. But Franklin's efforts on behalf of Pennsylvania first, and afterwards of all the Colonies, form a very interesting chapter of American history, which is well set forth in this book. The most important of Franklin's public services, however, were rendered in the capacity of minister to France, and it is this part of his work that Mr. Morse has most elaborately treated. Franklin's labors were by no means confined to securing the alliance of France, but included also the difficult task of borrowing, or begging, money in France and everywhere else where it could be got, together with a great variety of services besides. He had for a time two colleagues, but neither was of much use, while one was a mischief-maker of the first order, so that the whole burden virtually fell upon Franklin; and Mr. Morse probably does not exaggerate when he affirms that Franklin's services to the national cause were only less arduous and important than those of Washington.

With regard to the character of his hero, our author expresses himself with some enthusiasm. "Intellectually," he maintains, "there are few men who are Franklin's peers in all the ages and nations. . . . He illustrates humanity in an astonishing multiplicity of ways at an infinite number of points. He, more than any other, seems to show us how many-sided our human nature is." This may be somewhat exaggerated, but it is substantially true; for few men in history have been great at once in such widely separated departments as politics, science, and literature. With regard to his moral character, Mr. Morse, while not extenuating his faults, prefers to dwell on his excellences, which were undeniably of a high order. "As a patriot, none surpassed him," and "the chief

motive of his life was to promote the welfare of mankind." "It is not worth while to deify him, or to speak with extravagant reverence, as if he had neither faults nor limitations. Yet it seems ungracious to recall those concerning one who did for his fellow-men so much as Franklin did. Moral, intellectual, and material boons he conferred in such abundance that few such benefactors of the race can be named, though one should survey all the ages." This is high praise, but it is in the main well deserved; and now, when disinterested patriotism is rare among us, Franklin's example ought to be kept before our eyes, and we hope that this book will be widely read.

Darwinism: An Exposition of the Theory of Natural Selection, with Some of its Applications. By ALFRED RUSSEL WALLACE, LL.D. London and New York, Macmillan. 12°. \$1.75.

DARWIN, in the greatness of his unselfish candor, receded somewhat from the claims of his theory of natural selection, yielding to certain adverse criticisms; and now Dr. Wallace, who had independently originated the same theory, shows anew his own magnanimity in coming to the rescue in a volume entitled "Darwinism." The book is opportune, and worthy of its distinguished author, who is a recognized authority. Addressing all intelligent readers, it surveys the whole subject, confining this for the most part, however, to Darwinism pure and simple, which, as given in the title of Darwin's first enunciation, is the "origin of species;" namely, from pre-existing species by natural selection. Dr. Wallace has the advantage of reviewing the subject "after nearly thirty years of discussion, with an abundance of new facts and the advocacy of many new and old theories," especially from the pens of noted investigators and leading evolutionists.

This limitation to evolution of species, in twelve of the fifteen chapters, avoids many perplexing questions, and gives simplicity and unity to the argument. The author regards the main proposition, in its application to existing or comparatively recent species, as all that can be proven, every thing beyond that lying in the region of probable conjecture. The difficulties, popular or scientific, relate chiefly to the origin of the larger divisions of the organic kingdom, the first development of complex organs, and the like. All this is too remote and too imperfectly recorded to be entirely solved; yet he believes that the generic and ordinal differences among plants and animals are of the same nature as those found in many groups of species, only greater in amount. As we rise to classes and sub-kingdoms, the difficulty is much increased, and we may reasonably doubt whether a radically distinct plan of structure is due to the action of the same laws that have developed species.

In the second chapter, on the struggle for existence, old and new facts are presented, ending with an ethical vindication of nature. In the third the variability of species is illustrated by statistical diagrams and otherwise, showing that it superabounds and offers always and everywhere material that is plentiful for natural selection, rather than slight and rare, thus obviating one of the common objections to transmutation of species. After discussing in further chapters the subjects of artificial and natural selection, and after meeting certain objections (the utility of all specific characters being especially asserted, with some qualification, and the swamping effects of intercrossing denied), the author treats of infertility of crosses, and sterility of hybrids, and opposes the "physiological selection" of Romanes. Going a step further than Darwin, he regards infertility as beneficial under certain circumstances, and increased by selection. Four chapters are given to color, exhibiting the author's well-known views as to its origin and its uses, re-enforced by Alfred Tylor's observations on structural decoration. Darwin's theory of sexual selection of the ornamental is rejected, there being, for example, no evidence, except to the contrary, "that slight variations in the color or plumes, in the way of increased intensity or complexity, are what determines the choice."

The concluding chapters consider geographical distribution; the geological evidences of evolution; certain fundamental problems of variation and heredity, with criticism of the recent speculations of Spencer, Cope, Karl Semper, and Geddes, referring particularly to the improved Lamarckian doctrine, lately revived, that acquired characters are inherited; and, finally, Darwinism applied to man.